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Online Versus On-site Clinical Practicum: An Evaluation by Nursing Students During a Pandemic

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Abstract: *This descriptive study aimed to compare the effects of online and on-site clinical practicum for nursing students, particularly in a situation where clinical practicum opportunities were limited due to the COVID-19 pandemic. A total of 65 nursing students who had experienced on-site clinical practicum were compared with 65 nursing students who had undergone online clinical practicum. The satisfaction of the students with their practicum was assessed using a 17-item satisfaction tool, while their clinical competence was evaluated using a 23-item Clinical Competency tool. Additionally, professional socialization was measured using a 52-item Professional Socialization Scale. The results of this study suggest that online clinical practicum may have similar effects on clinical competence and professional socialization as on-site clinical practice for undergraduate nursing students. Therefore, online clinical practicum could be a valuable supplement to clinical education, especially in situations where traditional practicum opportunities are limited due to infectious diseases or a lack of available practice institutions. In such cases, it can be considered an effective parallel or alternative to on-site clinical practice.*

Keywords: Online; Practicum; Practicum satisfaction; Clinical competency; Professional socialization

1. Introduction

Due to the ongoing Severe Acute Respiratory Syndrome-Coronavirus-2 (SARS-CoV-2; COVID-19) situation, all fields such as society, economy, and education, are being affected, and the field of nursing education is no exception. In particular, clinical practicum for undergraduate nursing students is limited in terms of educational efficiencies, such as stopping clinical practicum or conducting online clinical practicum [1, 2] due to the government's disease control guidelines to prevent the spread of COVID-19 and the prevention of the spread of infectious diseases in medical institutions. In addition, as cases of female and child nursing, which can be caused by the low fertility problem, are decreasing [3, 4], and patient privacy and safety issues are also emerging, various limitations related to the clinical practicum of nursing students are expected to continue even after the COVID-19 situation is over [5, 6].

Nursing deals with human health problems and provides appropriate interventions. Therefore, it is difficult to train nurses with sufficient competency in clinical practicum by theory alone. Based on what we learned in theory, we evaluate the subject's health problems, study case studies to select and provide appropriate interventions, and observe and directly perform to supplement the core nursing skills and problem-solving skills required through clinical practicum [7-9]. In addition, in Korea, it is stipulated that nursing students must complete at least 22 credits of clinical practicum courses during their undergraduate to take the national licensing exam [10-12]. Therefore, in the event of a situation where clinical practicum is restricted due to the current COVID-19 situation, the emergence of another infectious disease in the future, or other issues mentioned above, a learning plan supplements the situation should be prepared.

Nursing students can experience professional socialization through clinical practicum [13]. Professional socialization involves understanding values and norms beyond simply acquiring the skills and knowledge

necessary to perform a role [14]. It also refers to a learning activity that compares the appearance of a clinical nurse imagined by nursing students with that of a nurse performing actual work in a clinical setting and establishes the role, custom, belief, and appropriate view of the profession [15]. Professional socialization of nursing students has been reported to be a factor that affects the professional growth and turnover rate of nurses and thus affects the sustain-ability of the profession [13]. Therefore, it is important to cultivate the professional socialization of nursing students through the clinical practicum. In addition, professional socialization education is directly related to students' practicum satisfaction [16]. Practicum satisfaction is a factor that is evaluated, including the instructor's attitude, the burden of learning, the learning schedule, and the gap between theory and practice [17]. It was reported that the higher the practicum satisfaction, the higher the motivation to use the contents of learning in the field [18]. Therefore, clinical practicum satisfaction is an indicator for evaluating the learning outcomes of practicum education [19], and high practicum satisfaction can positively affect clinical competence and professional socialization.

In Korea, before the COVID-19 situation, a study applied on-offline mixed practicum for 6 weeks to third-year nursing students under the block system, which divided one semester into the first half for theory classes and the second half for clinical practicum made it possible to improve critical thinking, self-directed learning, and clinical competence. It was confirmed that a practicum is effective if online content that can enhance clinical competence is included [20]. There was no difference in self-directed learning readiness or motivation between the online training group and the on-site training group in Adult nursing practicum subjects, and the online training group had higher practicum satisfaction [21]. It was found that self-efficacy was in-creased by allowing students to repeat learning the content online [22].

In the COVID-19 situation, an online clinical practice was conducted in various courses such as Adult nursing, Psychiatric and mental health nursing, Community health nursing, and Child health nursing in Korea [23-27]. Trainees' satisfaction, confidence, and academic achievement were significantly increased through online practice [24-26], and trainees' self-efficacy was significantly increased [25]. Learning motivation and problem-solving ability showed significant increases in the students who participated in online learning than those who did not, and there was no difference in communication skills between the two groups [28]. However, in other studies, online practicum significantly improved critical thinking [1], [29], clinical competence [2], [30], reasoning ability, and problem-solving [1], [29], [30]. There was no difference in knowledge level between students who participated in online practicum and those who did not [31].

As described above, it was confirmed that studies were being actively conducted to develop a clinical performance for actual nursing work and evaluate its effectiveness through various online practicums conducted both in Korea and abroad. Nevertheless, the evaluation of professional socialization, an important factor in understanding the values and norms of nursing that can be established based on actual nursing in the clinical field, and establishing the role of nurses, was insufficient in online practicum [14, 15]. Therefore, it is necessary to evaluate the establishment of professional socialization through the online clinical practicum. Furthermore, since high practicum satisfaction can positively affect the achievement of learning outcomes [18, 19], practicum satisfaction is also an important factor in evaluating the effectiveness of online clinical practicum.

As it became impossible to provide clinical practicum through the existing circumstances due to COVID-19, a nursing college located in Gimhae-si, Korea, provided 3rd year nursing students with Child health nursing practicum in two ways: 1) On-site clinical practicum to directly experience and observe nurses' work; 2) Online clinical practicum that includes a program to indirectly experience and observe nurses' work through online media. This study intends to examine practicum satisfaction, clinical performance, and professional socialization, which previous studies have not studied. A survey was conducted on the two groups of nursing students to assess the degree of practicum satisfaction, clinical performance, and professional socialization.

This study aimed to compare the effects of an online clinical practicum program to a traditional on-site clinical practicum on practicum satisfaction, clinical performance, and professional socialization in a situation where clinical practicum for nursing students was limited.

The structure of this paper is as follows. Chapter 2 describes major variables and research methods. Chapter 3 describes the research results. Chapter 4 demonstrates that online practicum can be an alternative to clinical practicum. Finally, Chapter 5 describes conclusions and future research.

2. Materials and Methods

2.1. Study design

This study is a descriptive study. We surveyed undergraduate nursing students who have taken either an online clinical practice or an off-site clinical practice to com-pare the 2 groups of students on the level of practicum satisfaction, clinical performance, and professional socialization.

2.2. Study participants

The subjects of this study were 157 students who are enrolled in the third year of nursing at a college located in Gimhae-si, Korea and have registered for the Year 2021 child health nursing practicum. Participants were randomly assigned in consideration of the capabilities of the training institution. Among them, 72 students took the online clinical practicum whereas 85 students took the on-site clinical practicum. As a result of calculating the number of samples required for the t-test for comparison between the two groups with G*Power (Ver. 3.1.9), significance level (α) = .05, power (β) = .80, median effect size (d) = .50, was 64 people for one group. Among the 157 students, the respondents of the survey were 130 people (65 on-site clinical practicum, 65 on-line clinical practicum), and it satisfied the number of samples calculated through G*Power. After distributing the questionnaire to the study participants, 130 copies of the questionnaire data were analyzed since there were no non-respondents or duplicate respondents. This study was conducted after receiving approval from the Institutional Review Boards (IRB) of the institution (No. PNU IRB/2021_169_HR). Informed consent was obtained from all subjects involved in the study.

2.3. On-site and online clinical practicum procedure

The on-site clinical practicum was conducted for one week using a professor's lecture and clinical practicum for a traditional learning method. The number of groups was 8. Each group was assigned around eight students, and the practicum was conducted by inducing the students to establish a frame of thinking through case studies and the nursing process. The clinical practicum was carried out in four hospitals, and the practice was conducted by observing and experiencing the nurse's work under the guidance of the head nurse in the ward. In addition, on-site guidance was provided by the professor once a week, and during this time, learning contents were checked, and feedback was provided through question and answer.

Online clinical practice practicum was conducted for one week using Microsoft Teams (Microsoft Corp., USA) and Nursing Skill (Elsevier Corp., USA) programs, and each group was assigned around eight students. The number of groups was 8. The practicum was conducted by providing the students with a virtual scenario and learning the nursing process through case studies to establish a thinking framework. The practicum was conducted by watching and learning videos of examination and nursing core techniques that can be observed in the pediatric ward. To observe the actual nurse's work and the appearance of patients and guardians, video programs related to the pediatric ward were included. For management of practicum time, attendance check, and the learning schedule of the day were checked before the start of practicum every day by holding a meeting through the Microsoft Teams program. At the end of the practicum, the contents of the day's learning were checked, and feedback was con-ducted. The program schedule for online clinical practice education is as shown in supplementary material. On the last day of both on-site and online practicum, nursing skills were evaluated through an on-campus meeting, case study presentations, sharing of impressions about the practice contents, and question-and-answer sessions were held.

2.4. Instruments

2.4.1. General characteristics of the subject

The general characteristics of the subjects consisted of 8 questions: gender, age, practicum method (on-site/online), Child health nursing grades, Nursing process and critical thinking grades, nursing skill level, education experience, and hospital work experience. Child health nursing grades and Nursing process and critical thinking grades indicate the evaluation criteria that students receive after the end of the semester, divided into five items ranging from A to F. Nursing skill level indicates the self-evaluated level of nursing skills by the student and is divided into five levels from "very high" to "very low". Educational experience and hospital work experience indicate whether the subjects had previous university education or work in a hospital.

2.4.2. Practicum satisfaction

Practicum satisfaction is a tool [32] for measuring the positive emotional response of nursing students in various aspects such as practicum content, practicum guidance, practicum environment, practicum time, and practicum evaluation. In this study, practicum satisfaction was measured with the tool developed by Yoo [33] and modified by Chang [34]. The survey consisted of 17 questions, including student learning attitude, professor's lecture preparation, lecture progress, content, learning evaluation, etc. Each question was composed of a 5-point Likert scale, and the reliability of the original tool was Cronbach's α=.86, and the reliability of this study was Cronbach's α=.94. For the validity test, exploratory factor analysis (EFA) was performed using principal component analysis and Varimax rotation. The minimum factor loading criterion was set to 0.5. The commonality of the scale was also evaluated to confirm the acceptable level of ex-planation, and all groups were found to be 0.5 or higher. The result of Bartlett's sphericity test was []33.85 ($p < .001$). The Kaiser-Meyer-Olkin (KMO), which indicates the appropriateness of the data for factor analysis, was 0.90. Finally, the factor solution de-rived from this analysis yielded three factors for the scale that accounted for 66.6% of the variance in the data.

2.4.3. Clinical competency measurement

A clinical competency measurement is a tool for the complex evaluation of knowledge, skills, attitudes, and value competencies that are the basis for effective job performance in the nursing profession [35]. In this study, it was measured with a tool developed by Lee et al. [36] and modified by Lee [14]. The survey consisted of 23 questions, including nursing process and nursing skills, leadership, and cooperative relationships. Each question was composed of a 5-point Likert scale, and the reliability of the original tool was Cronbach's α=.96, and the reliability of this study was Cronbach's α=.95. For the validity test, EFA was performed using principal component analysis and Varimax rotation. The minimum factor loading criterion was set to 0.5. The commonality of the scale was also evaluated to confirm the acceptable level of explanation, and all groups were found to be 0.5 or higher. The results of the KMO test and Bartlett's sphericity test for 23 items were 0.925 and 2000.074 ($p < .001$), respectively. The factor solution derived from this analysis yielded three factors for the scale that accounted for 62.4% of the variance in the data.

2.4.4. Professional socialization

Professional socialization is a tool to evaluate the social learning level of individual nursing students through careful listening and observation of the values, attitudes, behaviors, standards, and surrounding people for the nursing profession [37]. In this study, the Professional Socialization scale developed by Toit [38] was measured with a tool translated by Oh et al. [39]. The survey comprised 52 questions about vocation, maturity, independence, and decision-making. Each question was composed of a 5-point Likert scale, and the reliability of the original tool was Cronbach's α=.89, and the reliability of this study was Cronbach's α=.97. For the validity test, EFA was performed using principal component analysis and Varimax rotation. The minimum factor loading criterion was set to 0.5. The commonality of the scale was also evaluated to confirm the acceptable level of explanation, and all groups were found to be 0.5 or higher. The results of the KMO test and Bartlett's sphericity test for 52 items were 0.906 and 5436.61 ($p < .001$), respectively. The factor solution derived from this analysis yielded ten factors for the scale that accounted for 71.9% of the variance in the data.

2.5. Data collection

For the recruitment of research participants, the researcher recruitment guide was announced to all students in the corresponding 3rd year of nursing students. After that, an online survey was conducted once only for applicants. The practicum was conducted from June 28 to August 20, 2021. Data collection was four months later conducted from December 16 to 23, 2021, and an online survey service, Google Forms (https://www.google.com/forms, Google Incorporated, USA) was used. The participants, who understood the description of the content, purpose, and method of the study and who voluntarily expressed their consent to participate, could access the web page on their own and respond to the questionnaire Through the URL on the recruitment guide.

2.6. Data analysis

The collected data were analyzed using SPSS/WIN 25.0 (IBM Corp., USA). In order to test the homogeneity of the two groups, the general characteristics were analyzed by an independent t-test. The chi-square test was also used to analyze the difference in general characteristics between the two groups. The general characteristics, practical satisfaction, clinical performance, and professional socialization of nursing students were summarized using descriptive statistics. The differences between the groups on practice satisfaction, clinical performance ability, and professional socialization were compared with the independent t-test to confirm their significance.

2.7. Ethical considerations

This study was conducted after receiving approval from the Institutional Review Boards (IRB) of the institution (No. PNU IRB/2021_169_HR). The researcher provided the study participants with a description of the content, purpose, and participation of this study. To compensate for the vulnerability of the participants, we made sure that the participants voluntarily participated in the study, and it was clear to the students that there was no disadvantage even if they did not participate in the study. It was explained that the anonymity of the study participants is guaranteed, so the researcher cannot identify individuals through the questionnaire contents, which are not reflected in the subject evaluation. In addition, it was explained that even if the subject consented to participate in the study, the subject could withdraw his/her participation at any time if he/she wanted to. The data collected in this study were secured and encoded and will be managed according to the Personal Information Protection Act [40].

3. Results

3.1. Characteristics of on-site and online training groups

The total number of the students was 130, 65 students were from the on-site clinical practicum group, and the rest of 65 students were from the on-line clinical practicum group. We determined whether the two groups of students were different.

Table 1. General characteristics of the on-site and online practicum groups (N=130)

Variables	**Categories**	**Total**	**On-site Practicum (n=65)**	**Online Practicum (n=65)**	χ^2 (*p*)
		Freq (%)	**Freq (%)**	**Freq (%)**	
Gender	Female	99 (76.2)	43 (66.2)	56 (86.2)	7.159 (.007)
	Male	31 (23.8)	22 (33.8)	9 (13.8)	
Age (year)	20~24	71 (54.6)	34 (52.3)	37 (56.9)	4.704 (.455)*
	25~29	31 (23.8)	20 (30.8)	11 (16.9)	
	30~34	11 (8.5)	5 (7.7)	6 (9.2)	
	35~39	2 (1.5)	1 (1.5)	1 (1.5)	
	40~44	6 (4.6)	2 (3.1)	4 (6.2)	
	45≦	9 (6.9)	3 (4.6)	6 (9.2)	
Child Health Nursing	A ~ A+	72 (55.4)	37 (56.9)	35 (53.8)	6.194 (.103)
	B ~ B+	39 (30.0)	16 (24.6)	23 (35.4)	
	C ~ C+	17 (13.1)	12 (18.5)	5 (7.7)	
	D ~ D+	2 (1.5)	0 (0.0)	2 (3.1)	
	F	0 (0.0)	0 (0.0)	0 (0.0)	

Nursing Process and Critical Thinking	A ~ A+	31 (23.8)	19 (29.2)	12 (18.5)	3.483 (.323)
	B ~ B+	63 (48.5)	28 (43.1)	35 (53.8)	
	C ~ C+	32 (24.6)	17 (26.2)	15 (23.1)	
	D ~ D+	4 (3.1)	1 (1.5)	3 (4.6)	
	F	0 (0.0)	0 (0.0)	0 (0.0)	
Nursing Skill Level	Very high	13 (10.0)	5 (7.7)	8 (12.3)	2.165 (.539)
	High	68 (52.3)	38 (58.5)	30 (46.2)	
	Moderate	47 (36.2)	21 (32.3)	26 (40.0)	
	Low	2 (1.5)	1 (1.5)	1 (1.5)	
	Very low	0 (0.0)	0 (0.0)	0 (0.0)	
Education Experience	Yes	43 (33.1)	23 (35.4)	20 (30.8)	0.313 (.576)
	No	87 (66.9)	42 (64.6)	45 (69.2)	
Hospital Work Experience	Yes	34 (26.2)	18 (27.7)	16 (24.6)	0.159 (.690)
	No	96 (73.8)	47 (72.3)	49 (75.4)	

* Fisher's exact test

Table 1 shows the homogeneity test results according to the age of the study subjects, Child health nursing grades, nursing process and critical thinking grades, nursing skill level proficiency, education experience, and hospital work experience. Regarding age, most subjects were between 20 and 24 years old, with 34 (52.3%) on-site practicum students and 37 online practicum students (56.9%). The subjects over 45 years of age were three on-site practicum students (4.6%) and six online practicum students (9.2%). Among the students who received child nursing grades, A~A+ had the largest number of students, with 37 on-site students (56.9%) and 35 online students (53.8%). Of the lowest grades, 12 on-site students were C~C+ (18.5%), and two online students were D~D+ (3.1%). Regarding critical thinking and nursing course grades, 19 students had A~A+ (56.9%), and 29 had B~B+ (24.6%) in on-site practicum, and more than 80% had a grade of B or higher. In the online practicum, 12 students were A~A+ (18.5%), 35 were B~B+ (53.8%), and 72% were above B level. The subjects who answered "high" in nursing skill level were the most, with 38 (58.5%) in on-site practicum and 30 (46.2%) in online practicum, and no subjects answered, "very low". The number of students who responded that they had a university education before attending this department was 23 (35.4%) in on-site practicum and 20 (30.8%) online practicums. Regarding hospital work experience, 18 people (35.4%) answered that they had on-site practicum, and 16 (24.6%) had online practicum.

Overall, there was no significant statistical difference between the two groups (all $p > .05$) for most of the general characteristics, but in the case of gender, only the following cases showed a statistically significant difference ($t = 2.73$, $p = .007$) [on-site practicum: 43 females (66.2%), 22 males (33.8%); online practicum: 56 women (86.2%), 9 men (13.8%)].

3.2. Clinical practicum satisfaction, clinical competence, and professional socialization

Table 2. Practicum satisfaction, clinical competency, and professional socialization of the on-site and online clinical training groups (N=130)

Variables	Total	On-site Practicum			Online Practicum			t
	M±SD	M±SD	Min	Max	M±SD	Min	Max	(*p*)
Practicum Satisfaction	70.01±10.45	70.06±11.42	37	85	69.95±9.46	50	85	0.06 (.953)
Clinical Competency	4.2±0.53	4.2±0.53	2.9	5.0	4.2±0.53	2.7	5.0	-0.29 (.769)

Professional Socialization	4.2±0.54	4.2±0.56	2.7	5.0	4.1±0.51	2.9	5.0	0.88 (.382)

Table 2 shows the differences in practicum satisfaction, clinical performance, and professional socialization in the on-site clinical training and online clinical training groups in this study. Practicum satisfaction was not statistically significant, with the summation of 70.06 ± 11.42 points for on-site clinical training and 69.95 ± 9.46 points for online clinical training (t = 0.06, p = .953). Clinical competence was not statistically significant, with an average of 4.2 ± 0.53 points for on-site clinical training and 4.2 ± 0.53 points for online clinical training (t = -0.29, p = .769). Professional socialization was not statistically significant (t = 0.88, p = .382), with an average of 4.2 ± 0.56 points for field training and 4.1 ± 0.51 points for online training.

4. Discussion

Currently, there is an increasing demand for patient safety and quality improvement in the medical field. In response to this demand, the government is also carrying out projects to support the ability of new nurses to adapt to the hospital and improve the quality of medical care through strengthening clinical training and practical education [41]. In addition, the Korean Accreditation Board of Nursing Education (KABONE) suggests strict evaluation standards such as the number of practical students and the qualifications of instructors for the efficient operation of practical education [11]. However, many restrictions have been imposed on clinical training since 2019 due to various social factors, such as the government's disease control guidelines and the number of confirmed COVID-19 cases, and this situation may be repeated in the future [42]. This study was carried out to effectively achieve clinical training of nursing students by comparing and evaluating the group that conventionally conducted on-site clinical practicum and the group that had online clinical practicum.

The practicum satisfaction evaluated in this study was higher than the results of previous studies [43-45] conducted on nursing students who experienced online clinical practicum in the COVID-19 situation. In addition, on-site practicum was a significantly higher score than online practicum in previous comparative research, showing different results from this study. It is difficult to directly compare the results of this study with those of previous studies because the composition and design of online practicum conducted by each educational institution in the COVID-19 situation are different. Nevertheless, unlike previous studies, online practicum performed in this study was designed so that instructors could interact with students every day during the training period, which is considered the leading factor to have the results in higher satisfaction compared to previous studies. Moreover, as the scheduling burden on the on-site practice is reduced and negative effects such as interpersonal problems and clinical stress, which are conflicting factors that occur during practice, are reduced, the satisfaction of online practicum is at or higher than that of on-site practicum [46]. In addition, it is supported by the research result that the students feel a sense of achievement for non-face-to-face practice because it is possible to practice through repeated learning according to one's level, and they can experience various diseases and interventions through educational videos [47]. It is reported that the higher the satisfaction with the training, the higher the clinical competence [48]. Based on the results of previous studies showing a significant positive correlation between practicum satisfaction and professional self-concept [49], it is necessary to develop and apply an effective practical education program suitable for the characteristics of each grade and subject that reflects the environmental change in preparation for the current situation of COVID-19 and the post-corona era. Moreover, teachers need to utilize various methods to reflect the characteristics and needs of students according to social changes of the time to design the practicum considering the effect of teaching method and competency on practicum satisfaction [44].

The average clinical competence score calculated in this study between the two groups showed no statistical difference. In a previous study conducted by dividing adult nursing practicum students into two groups, on-site and online, in the COVID-19 situation, on-site practicum scored 4.2 and online practicum scored 3.9, indicating that on-site practicum was significantly higher (p = .010) [45]. However, in a previous study of nursing students who experienced online practicum during COVID-19, the average scores were 3.8 [43], 3.7 [50], and 3.9 [44], which were higher than 3.7 [51], 3.64 [52], and 3.72 [53] at on-site practice. Considering the results of this study and the previous studies, it is difficult to clearly distinguish the clinical performance between on-site practicum and online practicum, stating that students were able to achieve clinical performance through learning synchronization with on-line learning and self-learning and nursing skills were improved through repeated-learning and actual self-execution [26]. It is also stated that the students learned more about nursing through self-directed learning and feedback, which provided an opportunity to grow as a nurse who

applies patient-targeted nursing throughout cases. Based on these results, it was confirmed that there was no difference in clinical performance if the interaction between students and instructors was active even when clinical practicum was conducted online. Various online learning contents have been developed and utilized to operate online practicum due to the outbreak of COVID-19 efficiently. In this situation, research to confirm the effects of various case scenarios and contents reflecting the reality of the field should be continuously conducted, and research to identify various factors that can improve the clinical performance of nursing students in an online practicum environment is needed in the future.

The overall average of professional socialization level by group according to the type of practicum was 4.2 ± 0.54, and there was no significant difference between the two groups. Our result is higher than the 3.8 points of the study by Park et al. [54] for nursing students who performed nursing management practicum on-site and 3.74 points for nursing students who performed adult nursing practicum [39]. It was also higher than the 3.74 points [55] of nursing students who experienced online practicum. Therefore, this study findings were consistent with previous studies showing no difference in the level of professional socialization between the two types of clinical practicum. Similar to this research, Kammeyer-Mueller et al. [56] confirmed that the harmonization of the information acquired before the career and the experience during actual work affected successful adaptation to the organization. In addition, it was con-firmed that clinical competence and organizational socialization showed a significant positive correlation through the study of Park et al. [57]. Referring to the contents of previous studies [58, 59] that clinical competence affects professional socialization because it is the preparation for the transition to nurses perceived by students, it is considered that the level of professional socialization was high as nursing students responded with a high level of clinical competence through the self-report questionnaire in this study. As the result of this study, if professional socialization can be achieved through online practicum as well as on-site practicum, improving professional socialization through clinical practicum will reduce the actual gap in the actual field and stabilize the manpower problem in the medical field. It could also help newly employed nurses who cannot overcome the actual practice in the hospital and cannot adapt to professional socialization [50], [5].

There are some limitations to this study. First, a study was conducted targeting nursing students at one university. Therefore, caution is needed in interpreting and generalizing the study results. In the future, it is necessary to increase the validity of the results of the effect verification through continuous research. Second, due to the situation of class operation, research participants are assigned in the form of convenience sampling, so there may be biases, so attention should be paid to interpretation and generalization. Third, there may be a risk of detection and performance bias because there is no blinding of reporters because there are instructors who participated in both the program and data collection and evaluation processes. In future research, to improve the quality of the study, it will be necessary to conduct the study by seeking blindness between the reporter and the investigator through a randomized trial design.

5. Conclusions

This study examined the effects of on-site and online clinical practicum. On-site clinical practicum has been regarded as a traditional and indispensable learning method that is difficult to replace as it allows nursing students to experience professional socialization along with their self-experience and nursing skills study through direct clinical competence in the real clinical field. This study demonstrated that online clinical practicum may have similar effects to clinical practice regarding clinical competence and professional socialization for undergraduate nursing students. Therefore, online clinical practicum can be applied to supplement clinical education in a situation where practicum is difficult due to the occurrence of infectious diseases or lack of practice institution, so it would be considered an effective parallel or alternative to on-site clinical practice.

Conflicts of Interest: The authors declare no conflict of interest.

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